

IN THE CLAIMS

This listing of claims replaces all prior listings and versions of the claims in the present application.

Listing of Claims:

Claim 1 (Currently Amended): A cleaning unit for removing toner remaining on a surface of an image carrier of an image-forming apparatus, comprising:

a vibration member extending in a direction of a width of the image carrier, the vibration member having at least one vibration application part attached thereto;

a blade member attached to at least an end region of the vibration member, the blade member extending in the direction of the width of the image carrier; and

a driving part configured to drive the at least one vibration application part at a driving frequency, the driving frequency being a natural resonance frequency occurring at a time of assembly of the blade member and the image carrier,

wherein the vibration member is configured to provide vibration to the blade member and a force to press the blade member against the image carrier, and wherein

the at least one vibration application part and the blade member are disposed on a first side and a second side, respectively, of the vibration member at a free end thereof which is engageable with the image carrier and which are oriented parallel to one another, the first side and the second side of the vibration member facing away from each other.

Claim 2 (Original): The cleaning unit as claimed in claim 1, wherein the driving part is configured to be capable of changing the driving frequency.

Claim 3 (Original): The cleaning unit as claimed in claim 2, wherein the driving frequency of the driving part is set based on frictional resistance between the blade member and the image carrier.

Claim 4 (Original): The cleaning unit as claimed in claim 3, wherein the driving frequency of the driving part is set based on a coefficient of friction of the surface of the image carrier.

Claim 5 (Original): The cleaning unit as claimed in claim 3, wherein the driving frequency of the driving part is set based on rotational torque of the image carrier.

Claim 6 (Original): The cleaning unit as claimed in claim 3, wherein the driving frequency of the driving part is set based on a result of detection of a cleaning characteristic.

Claim 7 (Original): The cleaning unit as claimed in claim 1, wherein the at least one vibration application part includes a piezoelectric element.

Claim 8 (Original): The cleaning unit as claimed in claim 1, wherein the toner is polymerized toner formed by polymerization.

Claim 9 (Original): The cleaning unit as claimed in claim 1, wherein the resonance frequency is determined by the blade member and the image carrier.

Claim 10 (Currently Amended): A process cartridge freely attachable to and detachable from a main body of an image forming apparatus, comprising:

at least one of an image carrier, a charging unit, a development unit, and a transfer unit; and

a cleaning unit configured to remove toner remaining on a surface of the image carrier,

the cleaning unit including:

a vibration member extending in a direction of a width of the image carrier, the vibration member having at least one vibration application part attached thereto;

a blade member attached to at least an end region of the vibration member, the blade member extending in the direction of the width of the image carrier; and

a driving part configured to drive the at least one vibration application part at a driving frequency, the driving frequency being a natural resonance frequency occurring at the time of assembly of the blade member and the image carrier, wherein the vibration member is configured to provide vibration to the blade member and a force to press the blade member against the image carrier, and wherein

the at least one vibration application part and the blade member are disposed on a first side and a second side, respectively, of the vibration member at a free end thereof which is engageable with the image carrier and which are oriented parallel to one another, the first side and the second side of the vibration member facing away from each other.

Claim 11 (Currently Amended): An image-forming apparatus forming an image by electrophotography, comprising:

a cleaning unit configured to remove toner remaining on a surface of an image carrier of the image-forming apparatus,

the cleaning unit including:

a vibration member extending in a direction of a width of the image carrier,
the vibration member having at least one vibration application part attached thereto;
a blade member attached to at least an end region of the vibration member, the
blade member extending in the direction of the width of the image carrier; and
a driving part configured to drive the at least one vibration application part at a
driving frequency, the driving frequency being a natural resonance frequency
occurring at the time of assembly of the blade member and the image carrier,
wherein the vibration member is configured to provide vibration to the blade member
and a force to press the blade member against the image carrier, and wherein
the at least one vibration application part and the blade member are disposed on a first
side and a second side, respectively, of the vibration member at a free end thereof which is
engageable with the image carrier and which are oriented parallel to one another, the first side
and the second side of the vibration member facing away from each other.

Claim 12 (Currently Amended): An image-forming apparatus forming a color image,
comprising:

a plurality of process cartridges freely attachable to and detachable from a main body
of the image forming apparatus,

the process cartridges each including:

at least one of an image carrier, a charging unit, a development unit, and a
transfer unit; and

a cleaning unit configured to remove toner remaining on a surface of the
image carrier, the cleaning unit including:

a vibration member extending in a direction of a width of the image carrier, the vibration member having at least one vibration application part attached thereto;

a blade member attached to at least an end region of the vibration member, the blade member extending in the direction of the width of the image carrier; and

a driving part configured to drive the at least one vibration application part at a driving frequency, the driving frequency being a natural resonance frequency occurring at the time of assembly of the blade member and the image carrier,

wherein the vibration member is configured to provide vibration to the blade member and a force to press the blade member against the image carrier, and wherein

the at least one vibration application part and the blade member are disposed on a first side and a second side, respectively, of the vibration member at a free end thereof which is engageable with the image carrier and which are oriented parallel to one another, the first side and the second side of the vibration member facing away from each other.

Claims 13-42 (Canceled).

Claim 43 (Currently Amended): The cleaning unit as claimed in claim 1, wherein the blade member has a thickness of ~~50 to 2000 μm , and preferably~~ 100 to 500 μm .

Claim 44 (Currently Amended): The process cartridge as claimed in claim 10, wherein the blade member has a thickness of ~~50 to 2000 μm , and preferably~~ 100 to 500 μm .

Claim 45 (Currently Amended): The image-forming apparatus as claimed in claim 11, wherein the blade member has a thickness of ~~50 to 2000 μm , and preferably~~ 100 to 500 μm .

Claim 46 (Currently Amended): The image-forming apparatus as claimed in claim 12, wherein the blade member has a thickness of ~~50 to 2000 μm , and preferably~~ 100 to 500 μm .